

New Zealand Hydroptilidae (Order Trichoptera).

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NEW ZEALAND Hydroptilidae have attracted little attention, and only one species, *Oxyethira albiceps* McL., has been described. Even for this species the description is incomplete, as no drawings of the genitalia have hitherto been published.

A year or two ago Mr. Jack Henderson sent home a dozen or so of these little insects, and it was at once apparent that *O. albiceps* was by no means the only representative of New Zealand Hydroptilidae; and in a small collection sent me from the Cawthron Institute, Nelson, by Dr. R. J. Tillyard, with the request that I should describe any new material that I might find included in it, I found that there was, besides *O. albiceps*, at least one species distinct from those which Mr. Henderson had sent.

Three species form a group by themselves, and, although they have certain characters resembling those of *Oxyethira*, yet they differ consistently in other respects, and furnish material for a new genus, described as follows:—

PAROXYETHIRA n. g.

Spurs 0, 3, 4. Ocelli present. Head furnished posteriorly with two large lobes or caps. Antennae in ♂ with 32 to 41 joints, according to species. Palpi as in *Oxyethira*. Wings long and slender, apices very acuminate and generally furnished with tufts of white and also black hairs. In both anterior and posterior wings the sector (according to MacLachlan's nomenclature) is forked twice and upper branch of cubitus once, as shown in fig. 1.

Abdomen of ♂ having terminal dorsal segment excised with a wide deep U-shaped excision extending nearly to base of segment, exposing the penis in the cavity thus formed, and in one species a complicated arrangement of asymmetric, strongly chitinized teeth.

Superior appendages with apices directed towards each other and generally concave. From base of seventh ventral segment arises a process either broad and short or long and slender, according to species, and thickly covered with hairs. Sixth ventral segment armed with a tooth.

Abdomen of the ♀ resembling *Oxyethira*.

Paroxyethira tillyardi n. sp. (Figs. 2, 3, 4, 5.)

Length of anterior wing, ♂, 3.5 mm.

Antennae about 36-jointed in ♂; last dorsal segment excised as above; superior appendages very short, armed at extremities each with a short blunt finger-like tooth, directed inwards. In dorsal cavity can be seen, in balsam preparation, a series of strongly chitinized hooks, most of which are grouped on right side of cavity with blackened apices directed towards

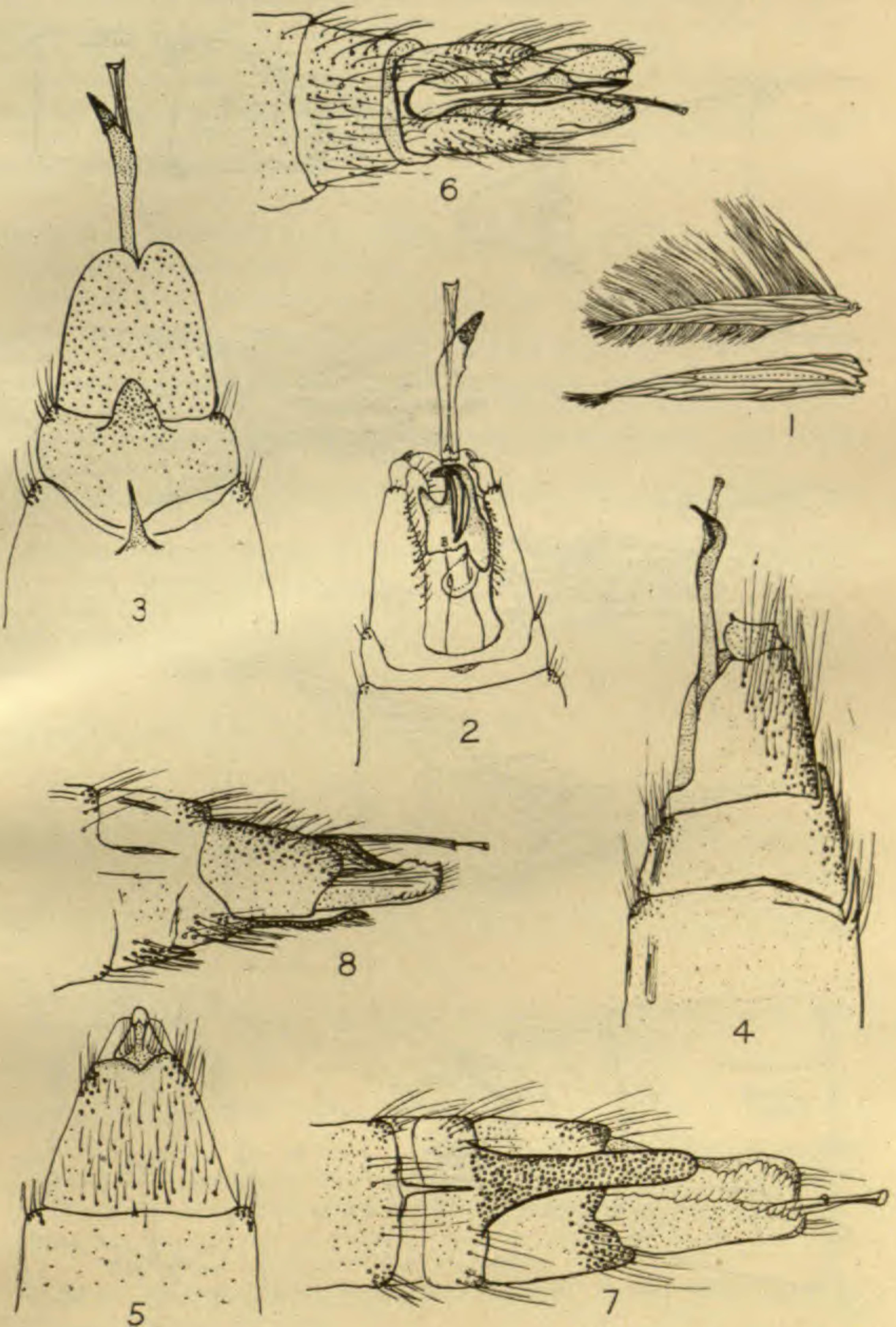


FIG. 1.—Wings of *Paroxyethira tillyardi*, ♂.
 FIG. 2.—*P. tillyardi*, ♂, dorsal. Portion of penis removed between A and B.
 FIG. 3.—*P. tillyardi*, ♂, ventral.
 FIG. 4.—*P. tillyardi*, ♂, from the side.

FIG. 5.—*P. tillyardi*, ♀, ventral.
 FIG. 6.—*P. hendersoni*, ♂, dorsal.
 FIG. 7.—*P. hendersoni*, ♂, ventral.
 FIG. 8.—*P. hendersoni*, ♂, from the side.

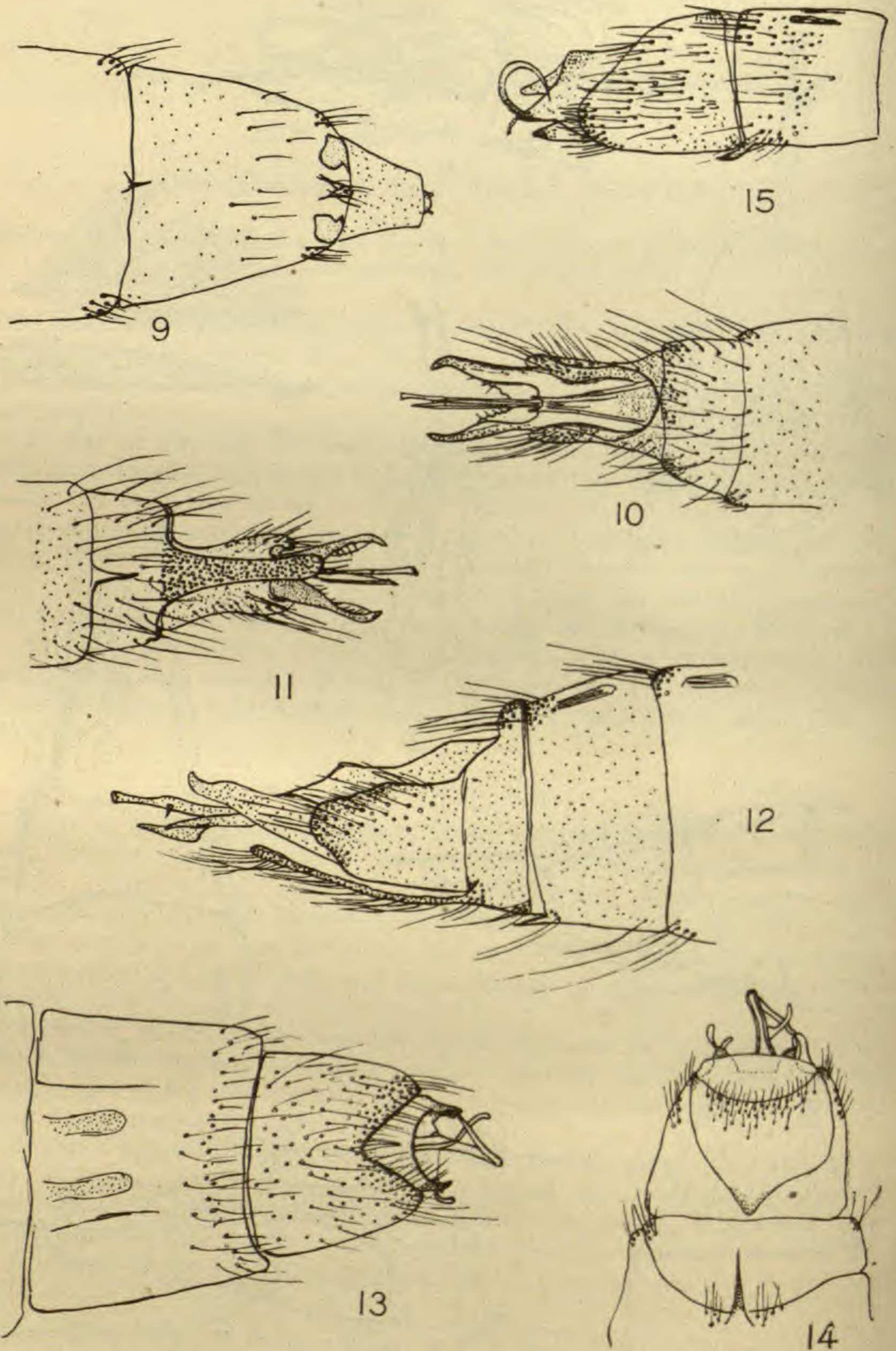


FIG. 9.—*P. hendersoni*, ♀, ventral.
 FIG. 10.—*P. eatoni*, ♂, dorsal.
 FIG. 11.—*P. eatoni*, ♂, ventral.
 FIG. 12.—*P. eatoni*, ♂, from the side.

FIG. 13.—*Oxyethira albiceps*, ♂, dorsal.
 FIG. 14.—*O. albiceps*, ♂, ventral.
 FIG. 15.—*O. albiceps*, ♂, from the side.

left; penis in all examples before me much exerted, and bearing a strong blackened tooth towards apex; process of seventh ventral segment short and broad; tooth on sixth ventral segment long and slender.

In ♀ the abdomen is stout, the last ventral segment deeply excised. There is a short tooth on penultimate segment.

Habitat.—Tarawera, North Island, New Zealand; 12th November, 1919. Cawthron Institute collection.

Paroxyethira hendersoni n. sp. (Figs. 6, 7, 8, 9.)

Length of anterior wing, ♂, 3 mm.

Antennae about 41-jointed in ♂. Last dorsal segment excised as above; superior appendages long, broad, and concave; lower edges armed with numerous teeth. Towards their bases are two slender hooks curved over penis-sheaths, which are strongly bent downwards before apices; penis long and slender, with a small hook some distance below apex; ventral process of seventh segment very long and spatula-shaped, with blunt rounded apex.

In ♀ the abdomen is stout and at base of seventh ventral segment are two strongly chitinized plates bent over and directed towards each other.

Habitats.—River Tekapo, Mackenzie County, South Island, New Zealand; 24th January–3rd February, 1922: in my collection. Spreydon, South Island, New Zealand; October, 1919: Cawthron Institute collection. Arthur's Pass, South Island, New Zealand; 16th January, 1920: Cawthron Institute collection.

Paroxyethira eatoni n. sp. (Figs. 10, 11, 12.)

Length of anterior wings, ♂, 3 mm.

Antennae about 33-jointed in ♂. Last dorsal segment excised as above; superior appendages concave, long and slender; upper margins gradually dilated below apices and curving inward; lower margins armed with teeth and strong hairs; penis long and slender, with small hook some distance below apex; penis-sheaths long and strongly chitinized, extending nearly whole length of penis; process of seventh ventral segment as in *P. hendersoni*; tooth on sixth ventral segment short.

Female unknown.

Habitat.—River Tekapo, Mackenzie County, South Island, New Zealand; 24th January–3rd February, 1922. In my collection.

Oxyethira albiceps McL. (Figs. 13, 14, 15.)

As no figure of the genitalia has hitherto been published, I include amongst these descriptions drawings from the single ♂ that I have before me. I am not altogether satisfied with these figures, as the balsam preparation has become very transparent and the various parts are somewhat obscure. The lateral aspect is a freehand sketch.

Habitat.—Spreydon, South Island, New Zealand. Bred by G. V. Hudson. Cawthron Institute collection.

In conclusion, I must express my thanks to Mr. Kenneth J. Morton, who kindly read through and verified the above descriptions.